

The Depth Penetration of Beryllium-7, ^7Be as a Tracer in the Sembrong Catchment Area Study

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Abstract : The main purpose of this research paper conducted was to study the penetration of ^7Be onto the soil surface for two different seasons in different areas of agricultural activity. The study was conducted during the dry and wet seasons from January to May 2019 in the Sembrong catchment area. The Sembrong Catchment Area is located in the district of Kluang, Johor in the South of Peninsular Malaysia and was selected based on the small size of the catchment and surrounded by various agricultural activities. A total of twenty (20) core soil samples to a depth of 10 cm each were taken using a metal corer made of metal. All these samples were brought to the Radiochemistry and Environment Group (RAS), Nuclear Malaysia, Block 23, Bangi, Malaysia, to enable the preparation, drying and analysis work to be carried out. Furthermore, all samples were oven dried at 45 - 60 °C so that the dry weight became constant and gently disaggregated. Lastly, dried samples were milled and sieved at 2 mm before being packed into a well-type container and ready for ^7Be analysis. The result of the analysis shows that the penetration of ^7Be into the soil surface decreases by an exponential decay. The distribution of profiles to the interior of the soil surface or h_0 values ranged from 1.56 to 3.62 kg m⁻² and from 2.59 to 4.17 kg m⁻² for both dry and wet seasons. Consequently, the dry season has given a lower h_0 value when compared to the wet season. In conclusion, ^7Be is a very suitable tracer to be used in determining the penetration onto the soil surface or h_0 values for the two different seasons.

Keywords : depth penetration, dry season, wet season, sembrong catchment, well type container

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